☑ 002

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Intellectual Property

* Denotes a mandatory field

INVENTION DISCLOSURE SUBMISSIC

RECEIVED
EICH PATENTS

* Invention Title:

A Voice Activity Detector For Packet Voice Network

Full legal name of 1st Inventor

* Last Name:	* First Name:	Middle Name:
Wang	Zifei	Peter

Name usually known as:

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* Citizen of: PRC

To list more inventors, click here.

Invention Disclosure Submission

* Name of supervisor or divisional head: Name of AVP Rep

* Indicate Your LOB:

Enterprise Networks ▼

If Advanced Technology, please indicate which group:

Please Make a Selection ▼

Does this invention arise from any arrangement involving an external organization? ○ Yes ◉ No
If so,

Name of organization: Contract No

Technical field:

Date of first written description:

Has this invention been discussed with others? If so, please comp

Inside Nortel   Outside No

To Whom?   To Whom?

When?   When?

Was there a Non-Disclosu

Are you aware of any imminent future disclosures? If so, please provide da

> This algorithm will be implemented on
> Marathon withing one month. After a short
> validation, it will be released to
> custermer.

Which products will use this invention?

This is a generic DSP algorithm. It will be used
on Marathon (Micom Voice Over Frame Relay product),
Passport 4400, VIP (Voice Over IP product) and
CPE-M (Voice Over ATM product).

Key words for searching:

VAD, SAD, DTX, silence detector, voice activity detector,
silence suppression, pink noise, color noise.

Is this invention relevant to a Standards activity? ○ Yes ◉ N
If so, give details:

Internal Project numbers under which this invention was fund

☑005

Technical Information

(This section must be completed.)

Brief description of the invention:

A typical discontinuous transmission system (DTX) consists of
a activity detector and a comfort noise generator (CN$).

In this invention, we design an efficient VAD by only
extracting a set of energy-based parameters of the
speech signal --- short term energy tracking, long
term energy tracking, peak mean ratio and peak mean
likelihood ratio. Thus a voice activity decision
space is spanned by these parameters and a set of
decision logic is conceived to achive less voice-clipping
and better bandwidth saving.

What is the problem solved by the invention?
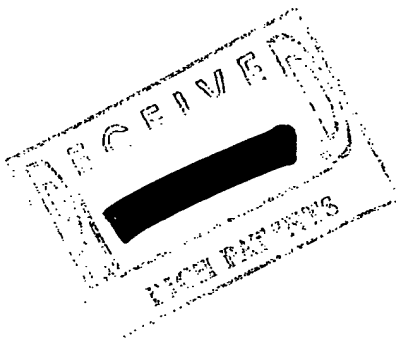
It usually requires a more complicated model to model the silence background and thus make a reliable decision whether it is voiced or silence frame, the complexity requires significant amount of processing power. In this invension, we have designed a set of parameters that are derived directly from the speech frame energy. The processing power needed for calculating this set of parameters is much less, but a reliable activity decision can still be reached.

What other solutions have been tried and what were their shortco

The short term energy tracking plus long term energy tracking have been used for a class of simple VAD algorithm, which extracts only energy-based parameters. During a silence period, however, the long term tracking tends to catch up the short term energy tracking and results the decision making switches between voiced state and silence state frequently. The frequent switching between stats will results degradation the speech quality.

A new parameter call peak mean likelihood ratio is designed and thus one more dimension is introduced to the decision space. In the enlarged decision space, a set of decision logic is thus conceived to achieve more reliable decision. Moreover, the frequency of swithing between voiced and silence state during the silence period is greatly reduced. A better voice quality is achieved.

What are the specific elements or steps that solved the problem? Please provide some I invention works.
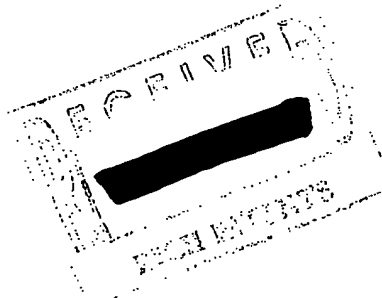
The parameter "peak mean likelihood ratio" is used to
introduce one more dimension to the decision space. A
set of new decision making rule is therefore designed
to achieve less voice-clipping and more bandwidth saving
during the silence period.

What is the commercial value of the invention to Nortel and Nortel's majo:

This invention can improve the voice quality and achieve
better bandwidth saving for Nortel's packet voice network
products like Marathon, VIP, Passport 4400, CPE-M.

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End of Form

Additional Inventors